THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte SHOICHI TANAMACHI and KAZUTO KIMURA

Appeal No. 96-2305
Application No. 08/149,627[1]

HEARD: June 7, 1999

Before HAIRSTON, BARRETT, and FRAHM, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 17. According to the examiner (Answer, page 1), claim 16 is now objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any

[1] Application for patent filed November 9, 1993.

intervening claims. Accordingly, claims 1 through 15 and 17 remain before us on appeal.

The disclosed invention relates to the use of adhesive spacers in a predetermined pattern between a glass substrate and an intermediate sheet in the liquid crystal cell portion of a plasma addressed liquid crystal display device.

Claim 1 is the only independent claim on appeal, and it reads as follows:

1. A plasma addressed liquid crystal display device, comprising:

a first substrate having a plurality of striped data electrodes formed substantially in parallel on a major surface thereof;

a second substrate opposed to the first substrate and having a plurality of discharge electrodes in a direction perpendicular to the data electrodes;

an intermediate sheet positioned between the first and second substrates, so that a discharge chambeer is formed between the intermediate sheet and the second substrate;

a plurality of barrier ribs of which top surfaces make contact with one side of the intermediate sheet, to form a contacting pattern of the barrier ribs, said barrier ribs forming recesses therebetween for containing gas; and

an adhesive spacer provided between the first substrate and the intermediate sheet to determine a thickness of liquid crystal layer, said adhesive spacer having a

> pattern corresponding to the contacting pattern, whereby the adhesive spacer is adhered to the other side of the intermediate sheet.

The reference relied on by the examiner is:

Kim 5,338,240 Aug. 16, 1994
(filed July 15, 1992)

Claims 1 through 15 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of Kim.

Reference is made to the briefs and the answer for the respective positions of the appellants and the examiner.

OPINION

We have carefully considered the entire record before us, and we will reverse the obviousness rejection of claims 1 through 15 and 17.

In the admitted prior art (specification, page 7), appellants disclose that:

> In order to control the gap of the liquid crystal cell 201 [Figure 13] uniformly, it is a conventional countermeasure to spray particulates 209 of a fixed particle size at random. Such particulates 209 are present in the gap and can act effectively to some degree against deformation in a compression direction to keep the dimension of the gap fixed.

Notwithstanding the presence of the particulates 209 in the gap, "the intermediate sheet 203 is inclined to be deformed downwardly by a negative pressure to increase the dimension of the gap" (specification, page 8). According to the admitted prior art (specification, page 8), "even if the particulates 209 are sprayed at random so as to be present in the gap, they float in the liquid crystal layer 208 and do not function effectively."

The examiner mistakenly concludes (Answer, page 4) that the particulates 209 in the admitted prior art are adhesive spacers, but correctly concludes that they are not in a pattern.

Kim discloses spacers 22 that are in a predetermined pattern between the two substrates 10a and 10b of a matrix-type liquid crystal display device (Figure 3 and column 2, lines 56 through 68). The spacers 22 are sandwiched between the black stripes 20 (or non-display regions) on one side of the display and the thin-film transistors 14 on the other side of the display. Kim never describes how the black stripes 20 and the spacers are "formed together" (column 4, lines 1

through 6) or how all of the structure is "combined to form a liquid crystal display" (column 4, lines 22 through 30).

Based upon the teachings of Kim, the examiner concludes (Answer, page 4) that "it would have been obvious to apply the teaching of Kim to the teaching of admitted prior art (fig 13) to make the spacer in a predetermined pattern since doing so is not only just one of many ways to make the spacers between two different layers in the LCD system, but also it is one of the steps in making uniform thickness of a liquid crystal display a possibility as specified by Kim."

For the advantage of improved contrast, we agree with the examiner that it would have been obvious to one of ordinary skill in the art to locate the spacers/particulates 209 in the admitted prior art (Figure 13) in a predetermined pattern in the non-display/black stripe region as taught by Kim (column 2, lines 45 through 49 and column 4, lines 46 through 49).

Notwithstanding our agreement with the examiner, appellants have correctly argued (Reply Brief, page 3) that:

> Kim, since it is not addressed to a plasma addressed LCD wherein an intermediate sheet spans across barrier ribs in an underlying plasma chamber, does not address this problem and as such, the spacers 22 are not adhesively attached to any intermediate

> sheet. The spacers 22 are fixed in the black stripe areas 20 but are not adhesively secured at an opposite end as shown clearly in Figure 3 of Kim and described at column 4, lines 22-30. Since there is no intermediate sheet which can deflect downwardly in the structure of Kim, there is no reason to make the spacers 22 of Kim adhesive spacers and no reason to particularly adhere the spacers at ends opposite to the ends fixed to the black stripes 20. Therefore, the spacers 22 of Kim are merely that, "spacers," and do not act to adhesively secure the LCD gap from deforming in a tension direction, i.e., pulling away from the spacer.

Thus, the claimed limitation of "the adhesive spacer is adhered to the other side of the intermediate sheet" is neither taught by nor would it have been suggested to one of ordinary skill in the art by the admitted prior art and Kim.

In summary, the obviousness rejection of claims 1 through 15 and 17 is reversed.

DECISION

The decision of the examiner rejecting claims 1 through 15 and 17 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
ERIC FRAHM Administrative Patent Judge	)

lp

Appeal No. 96-2305
Application No. 08/149,627

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Appeal No. 96-2305
Application No. 08/149,627

APJ HAIRSTON

APJ BARRETT

APJ FRAHN

DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s): _____

Prepared: July 27, 2000

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
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